## ****Comprehensive ClearCase Administration****

### ****Course Description****

ClearCase is a robust enterprise-level configuration management product widely used across complex development environments. This course is designed for ClearCase administrators with existing experience who are looking to deepen their understanding of advanced ClearCase features and best practices.

The course provides full coverage of ClearCase administrative topics, including VOB and view management, metadata handling, branching strategies, multi-platform environments, multisite administration, automation using triggers and scripts, and ClearCase version upgrades. The content is command-line focused and theory-driven, with an emphasis on troubleshooting and real-world administration strategies.

### ****Objectives****

Upon completion of this course, participants will be able to:

* Perform full ClearCase administration via the command line.
* Manage and maintain VOBs, views, and registry regions.
* Understand and create custom metadata types and config specs.
* Automate administrative tasks with triggers and scripts.
* Diagnose and resolve complex ClearCase issues.
* Administer ClearCase in multisite and multi-platform environments.
* Plan and perform ClearCase upgrades between supported versions.

### ****Target Audience****

ClearCase administrators responsible for managing and supporting ClearCase installations

### ****Prerequisites****

* Completion of an introductory ClearCase course or equivalent practical experience.
* Familiarity with system administration concepts, especially command-line operations and file permissions.

### ****Course Duration****

Four - Five Days

### ****Course Outline****

#### ****Section 1:ClearCase Fundamentals Refresher & Core Infrastructure****

* **ClearCase Architecture and Design**
  + VOBs and Views overview
  + ClearCase network topology and architecture
  + ClearCase administrator roles and responsibilities
  + ClearCase conceptual design
  + Primary ClearCase artifacts and storage locations
* **VOB Internals**
  + Database, pools, and meta-data
  + Public vs. private VOBs
  + VOB feature levels and database schema
  + Data types and type handlers
  + Element and VOB meta-data
  + VOB tags: mounting and unmounting VOBs
  + Creating and deleting VOBs
* **View Internals**
  + Structure of a view – view private areas
  + Introduction to config specs
  + The View process and how it interacts with the VOB and client processes
  + Creating a dynamic view
  + Using multiple views
  + How views are presented to the users and how views present VOBs
  + Editing and deleting views
* **Registry and Regions**
  + How the registry works: tags and registry objects
  + Registering and unregistering objects with the registry
  + Creating and removing tags
  + Using multiple regions within a registry
  + The role of the registry server
  + Users, groups and permissions

#### ****Section 2: Metadata, Configuration & Maintenance****

* **VOB Metadata Types**
  + Labels, Branches, Hyperlinks, Attributes, Triggers
  + Global vs. local types
  + Administrative VOBS
* **Extended Paths & Branching**
  + Version trees and extended pathnames
  + Mapping extended pathnames to the file system
  + Writing and applying custom config specs
* **Administering VOBs** 
  + Backing up, restoring, moving VOBs
  + Retiring and exporting VOBs
  + Problems withmoving elements within and between VOBs
  + Removing versions, names and elements
  + Common problems: evil twins, eclipsed elements etc.
  + Working with the lost+found directory
* **Scheduler and Automation Basics**
  + ClearCase scheduler usage
  + Regular Admin Task Scheduling
* **Maintaining VOBs**
  + **VOB feature levels and DB schema**
  + **VOB database snapshots and the**
  + **Pool scrubbing and tuning**
  + **VOB diagnostic and repair utilities**
  + **Cleaning up VOB metadata and storage**
  + **Initializing VOBs with clearfsimport**
* **Snapshot and Dynamic Views**
  + **Permissions and ownership of view storage**
  + **The internal structure of a dynamic view**
  + **Snapshot views: how they differ from dynamic views**
  + **Load Rules and Snapshot updating**
  + **Hijacked elements**
  + **When to use snapshot views as opposed to Dynamic Views**
  + **Common administration issues with Snapshots Views.**
* **Administering Merging**
  + **How ClearCase manages merges.**
  + **Additive and subtractive merges**
  + **The findmerge and merge tools**
  + **Administration responsibilities and activities for merges**
  + **Managing a merge process**

#### ****Section 3: Automation and Scripting****

* **Triggers**
  + Element vs. type triggers
  + Global vs. local triggers
  + Pre-op vs. Post-op
  + Cascading triggers
  + Operating specific script execution
* **Scripting for Admin Tasks**
  + Scripts for task automation
  + Executing scripts from the scheduler
  + Executing scripts from triggers
  + Accessing ClearCase event information using environment variables
  + Enforcing policies using scripts
  + Diagnosing problems with script execution
  + Some useful scripts
* **Auditing and Reporting**
  + Audit meta-data configuration
  + Using scripts for reporting
  + Resetting and collecting audit data

#### ****Section 4: Advanced Administration & Troubleshooting****

* **Administrative Tasks Review Checklist**
  + **Site preparation and planning**
  + **Backup and disaster recovery planning**
  + **Understanding the team and user SCM requirements**
  + **Creating and populating VOBs and Administrative VOBs and storage locations**
  + **Defining meta-data types for users**
  + **Defining regular tasks for the scheduler**
  + **Setting up the registry regions**
  + **Defining and managing the users and their groups**
  + **Creating the views and writing config specs**
  + **Regular diagnostics on VOBs**
  + **Responding to common “crises”**
  + **Forensics and recovery from commonly occurring problems**
  + **Policies to prevent common ClearCase problems**
* **Multi-Platform ClearCase Administration**
  + Windows vs. Unix Issues
  + Cross-Platform user and permission Issues
  + Migrating VOBs across OS environments
* **UCM Constructs**
  + UCM concepts – components, projects, baselines and streams
  + Project VOBs
  + Defining and creating components
  + Creating projects and adding components
  + Creating streams for projects
  + Creating and using baselines, rebasing work areas
  + How UCM is implemented by ClearCase
* **Administration Considerations for UCM**
  + Typical UCM administration issues
  + Backing up, restoring and moving UCM VOBs
  + Diagnosing problems with the config specs in streams
  + Problems when using multiple component VOBs or shared VOB
  + Introduction to ClearTeam Explorer
  + Diagnosing typical ClearTeam Explorer problems

#### ****Section 5: MultiSite, Upgrades, and Lifecycle Planning****

* **ClearCase MultiSite Administration**
  + Multi-site concepts and architecture overview
  + Replicas and VOB families
  + Exporting, shipping and importing actions
  + Creating replicas and synching replicas
  + VOB and component mastership
  + Issues with user permissions across replicas
  + Common problems with Multi-site
  + Special considerations for backing up and moving replicas
* **Upgrading ClearCase**
  + Version compatibility considerations
  + Pre-upgrade assessments and planning
  + Post-upgrade testing and validation
  + Preserving data integrity during upgrades